# Gunshot Wound of the Abdominal Aorta and Anoxic Cardiac Arrest: * Report of a Survival

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SUCCESSFUL treatment of a penetrating wound of the aorta is an uncommon occurrence, as testified by the paucity of published reports. The first was by Dshanelidze [3] in 1922, describing the repair of an intrapericardial aortic stab wound. In 1926, Wildegans [10] sutured an abdominal aortic stab wound. Scattered reports of the successful repair of aortic stab wounds followed, but not until 1944 was the first survivor of an aortic missile wound (shrapnel) reported.[4] Since then, long-term survival, following a bullet wound of the aorta has been unusual. We have found reports of only seven survivors following abdominal aortic missile wounds. Thoracic aortic and intrapericardial aortic bullet wound survivors are no more common. It seems, however, that this outlook should improve since statistics indicate that approximately 20 per cent of patients with extrapericardial aortic wounds survive the immediate postinjury period for 30 minutes or more.[9]

Reviewing the technical aspects of the problem, several authors [5-8] have established that at least 2.0 or 3.0 mm. of the edges of an arterial bullet wound must be debrided in order to insure accurate approximation of healthy arterial wall. In smaller arteries, this amount of debridement may necessitate resection with end-to-end anastomosis or graft replacement. In a vessel the caliber of the aorta, simple suture has been the most common method of repair. This choice of method is often dictated by the exigencies of the situation.

The following report describes a patient we recently treated who survived both a gunshot wound of the abdominal aorta and anoxic cardiac arrest. That this was achieved in a relatively small municipal hospital, not particularly geared to handle major trauma and lacking a resident staff, is worthy of mention.

## Case Report

A 17-year-old Latin-American woman was admitted to the McAllen Municipal Hospital at 12:05 a.m. on September 13, 1961 approximately 30 minutes after having sustained a gunshot wound of the abdomen. Initial examination revealed imperceptible blood pressure, rapid thready pulse, and sighing respiration. An entry wound with powder burns was situated just to the right of the midline below the costal margin and there was moderate abdominal distention.

After rapid infusion of 500 cc. of plasma expander and 1,000 cc. of normal saline, the blood pressure rose to 90/60 and the patient responded to questioning. Further examination revealed motor weakness and hypesthesia of the left leg. X-ray films showed a .22 caliber bullet in the left paraspinous area at the level of T-12.

Surgical exploration was carried out through an upper midline incision. The bullet had traversed the left lobe of the liver. On elevating the liver, a large retroperitoneal hematoma was seen for an instant before the area was obscured by massive arterial bleeding. Pressure was applied to the area while the incision was extended through the xiphoid process into the left chest. Cross clamping the descending thoracic aorta produced immediate rise in blood pressure. The diaphragm was divided to the aortic hiatus after distal control was ob-

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tained. After further dissection an 8.0 mm. tangential wound of the aorta was found aproximately 1.0 cm. above the origin of the celiac axis. Proximal and distal occluding clamps were more accurately placed, and after debridement, the defect was closed with a double row of continuous 3-0 Mersilene sutures. Total occlusion time was eight minutes. The repair produced approximately 20 per cent narrowing of the aortic lumen, an imperfection which was accepted for fear of renal and spinal cord damage. Wound hemostasis then was obtained, the liver drained, and the wound closed.

As the dressing was being applied, anoxic cardiac arrest with standstill occurred. This responded to rapid re-opening of the thoracic portion of the incision, oxygenation, and minimal massage. No blood was required for cardiac resuscitation.

The postoperative course was complicated by decubitus of the left buttock appearing on the third postoperative day. No oliguria ensued. Motor weakness and hyperesthesia of the left leg disappeared spontaneously. The patient was discharged on the thirteenth hospital day and has remained well on follow up. Blood pressure in her arms was 110/80, and in the legs 116/90 six months later.

## Summary

A brief review of the progress in the treatment of penetrating wounds of the aorta is presented in conjunction with reference to experimental studies establishing proper surgical technic for successful repair of aortic missile wounds.

A case report of a long-term survival following a combination of abdominal aortic gunshot wound and anoxic cardiac arrest is presented in detail.

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